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Preserving and Cooking Animal and Vegetable Substances.

(*This Invention received Provisional Protection only.*)

PROVISIONAL SPECIFCIATION left by George Clark at the Office of the Commissioners of Patents, with his Petition, on the 14th May 1873.

I, GEORGE CLARK, of No. 10, Craven Buildings, Drury Lane, in the County of Middlesex, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN PRESERVING AND COOKING ANIMAL AND VEGETABLE SUBSTANCES, AND IN VESSELS, APPARATUS, AND APPLIANCES FOR THOSE PURPOSES," to be as follows:—

This Invention which relates especially to the preserving of animal and vegetable substances in closed vessels by the action of heat, but may be made available to cooking purposes, has for its object certain improvements in the methods and processes now or heretofore in use for preserving or cooking food and also in vessels in which the said articles are contained, as well as in apparatus and appliances conducive to carrying out the operations of such preservation or cooking of animal and vegetable substances.

The improvements above referred to and which constitute my said Invention are based on the consideration that the principle of the preservation of articles of food and other animal or vegetable substances by the action of heat is to raise the temperature inside the vessel containing the article to be preserved to a temperature above 212° Fahrenheit for a period varying in duration according to the weight or bulk of the contents of the vessel and the degree of temperature applied therein, that is to say, for a longer time in proportion to the increase of the former and a shorter time in proportion to the augmentation of the latter. No precise rule can be laid down for the duration of time or degree of temperature in each case as both those conditions depend on the nature of the substances treated and on the use to which they are to be applied or the amount of cooking (if food) to which they are to be submitted; but as a general rule the time may vary from half an hour to two or three hours, and the temperature from 220° to 280° Fahrenheit. In each case experience must determine the one and the other, and beyond naming the limits just mentioned I do not consider it requisite to connect my said Invention with the duration of the processes or the temperature at which they are to be conducted.

As I propose to effect the object of the said Invention by various methods I will for the sake of correctness enumerate and describe the improvements in which these methods consist.

The 1st improvement relates to the means of expelling air by means of high-pressure steam from any preserving vessel and its contents by adapting and fitting to the cover of such vessel a steam valve of which the seat is soldered or brazed or otherwise fastened to the cover, and to which valve a stem or other contrivance is fitted to weight such valve, of which the action is of the same character as that of the steam valve of an engine boiler. By weighting the valve on the cover of the vessel to a given pressure the temperature required inside the preserving vessel is attained.

The 2nd improvement consists in the application and use of a false bottom inside and raised above the bottom of any preserving vessel for the purpose of generating high-pressure steam to act upon the substance contained in the vessel by means of weighting the valve fitted to the cover of the vessel which constitutes the aforesaid 1st improvement.

The 3rd improvement has for its object to subject articles of food or other substances contained in any vessel to the action of heat applied as herein-after mentioned by closing such vessel hermetically, leaving no orifice for the escape of steam, or if a valve be used as above described in my 1st improvement to a pressure corresponding to the temperature intended to be produced inside the vessel. In the latter case the valve will be a protection against excessive strain from internal pressure; in the former case that protection will be obtained by making the vessel in its materials, form, construction, and joints of sufficient strength to bear the internal pressure to which it is intended to be submitted in the process of heating its contents in any of the ways herein mentioned or referred to.

The 4th improvement consists in applying heat to any vessel containing animal or vegetable substances to be preserved or cooked, by placing such vessel in a dry hot chamber or oven heated to the required temperature by means of a stove or flues, or hot air or water or steam pipes or any other contrivance by which such chamber or oven can be heated and kept at a certain temperature, or the preserving vessel may be heated in a calcium bath in the manner practised and well known for heating the contents of preserving vessels. I do not propose to use a steam oven, which I am aware has been used and which would not effect the objects attained by this 4th improvement as part of my said Invention, the essential principle of this improvement being to carry it into effect without any countervailing external resistance to internal pressure inside of any such preserving or cooking vessel except the strength of the vessel itself with or without the aid of weight or mechanical pressure applied as herein-after described by and under improvement No. 6.

The 5th improvement has reference to the destruction or displacement of the germs of decomposition which may exist in any food preserving vessel or in the contents thereof. It consists in an apparatus for passing atmospheric air through an iron or other tube fixed in a stove or furnace, or otherwise heated and kept at a suitable heat to destroy such germs of decomposition by being imbedded in or in contact with ignited fuel contained in the stove or furnace, or enclosed in a steam pipe or by any other means which will effect the object of heating to the required temperature the air to be passed through the said heating tube. One end of this tube by means of a union joint or otherwise will be

connected with the pipe of a forcing air pump by which air is to be passed into the heating tube and through it at a given pressure into a pipe connected with the other end of the said heating tube, so that the said vessel being connected by means of a union joint or flexible tube or otherwise with the last named pipe, air in which the germs of decomposition have been destroyed by passing through the heated tube will be forced into and through the preserving vessel and its contents, thereby expelling the air in such vessels which may contain any of such germs and replacing it by air which has passed through the aforesaid heated tube. This operation being accomplished the outlet for the exit of air from the vessel may be closed by sealing the tube, and then the vessel may be detached from the air pump, the hole in the vessel for forcing air into it may be closed, and the vessel hermetically sealed at both ends.

The 6th improvement is the application of weight or mechanical pressure to the top and bottom of any vessel containing animal or vegetable substances to be preserved by heat, so as independently of or in addition to the strength of the vessel itself to resist and bear the strain of internal pressure during the time the inside of the said vessel is subjected to the high temperature described as a means of effecting the said preserving process in the above mentioned 3rd improvement, and I propose to enable such vessels to resist and bear such pressure by a screw or any other mechanical appliance acting on the top and bottom of the vessel as well as by placing a weight on the top of such vessel, in such way that this protective external pressure may be readily and promptly applied and removed. A material object & one of the effects of this improvement is to be able to use thinner metal for food preserving tins and thereby diminish the cost of such tins which adds considerably to the prices of the contents.

The 7th improvement consists in covering any food preserving vessel with a lid having a rim which being placed over the top of the body of such vessel shall rest outside the body like a saucepan lid on a bead or ledge round and near to the top rim of the body and in applying a washer of felt or caoutchouc or any other suitable material, which by means of pressure on the lid shall form an air and steam-tight joint between the cover and the body of the vessel during the time the process of preservation is in action, and until the vessel and its contents, after such process is concluded, shall be cold, after which the lid is to

be secured to the body of the vessel, and the joint between these two parts hermetically sealed by a band joint of metal or other suitable material, or by other suitable means.

I have transferred to this present Provisional Specification such parts of my Invention entitled "Improvements in Preserving Animal and Vegetable Articles of Food, and in Vessels, Apparatus, & Appliances for such Preservation," for which I obtained a certificate of Provisional Protection, No. 3393, dated the 14th November 1872, as relate to the application of a steam valve and false bottom to preserving or cooking vessels as herein-before described and mentioned as the 1st and 2nd improvements, but I do not comprise any other part of the improvements described in the last mentioned Provisional Specification as part of the Invention of which this is the Provisional Specification.

Any one or more of the improvements herein-before described as parts of my said Invention may be used in combination with another or others of them.

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